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10/052,029	01/15/2002	Akihiro Ohta	47723/DBP/A400	1244

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EXAMINER	
TABATABAI, ABOLFAZL	
ART UNIT	**PAPER NUMBER**
2625	

DATE MAILED: 02/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/052,029	OHTA, AKIHIRO	
	Examiner	Art Unit	
	Abolfazl Tabatabai	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 January 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 April 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/8/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakuma et al (U S 6,766,038 B1) in view of Ramakesavan (U S 6,184,781 B1).

Regarding claim 1, Sakuma discloses a target recognition apparatus that measures a distance from a vehicle to a target, the target recognition apparatus comprising:

two cameras that are mounted on the vehicle at positions at the same height above ground level (fig.2 elements 205 and 206), with a predetermined distance between the cameras (column 5, lines 24-35);

a target detecting unit that detects both ends of the target in each of the left image and the right image (column 7, lines 49-58), based on gradations of pixels in the images that have been compressed in at least a lateral direction (column 5, lines 11-15); and,

a distance measuring unit that measures a distance to the target, based on a parallax of both detected ends of the target (column 5, lines 24-35 and column 8, lines 18-28).

However, Sakuma is silent about the specific details regarding the step of:

an image compressing unit that compresses an image in at least a lateral direction, for each of a left image and a right image that are input after the images are picked up simultaneously with the two cameras;

In the same field of endeavor, however, discloses a Ramakesavan discloses rear looking vision system comprising the step of:

an image compressing unit that compresses an image in at least a lateral direction (fig.11 element 66 and column 2, lines 18-22), for each of a left image and a right image that are input after the images are picked up simultaneously with the two cameras (column 1, lines 62-66).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use an image compressing unit as taught by Ramakesavan in the system of Sakums because Ramakesavan provides Sakuma an improved advanced system for a vehicle includes first and second imaging devices adapted to develop images of an area to the rear of a vehicle. This system enable an operator to be advised about hazards to the sides and rear of vehicle.

Claim 2, is similarly analyzed as claim 1 above.

Regarding claim 3, Sakuma is silent about the specific details regarding the target recognition apparatus according to claim 1, wherein the image compressing unit compresses the images in a lateral direction, and also compresses the images in a vertical direction at a smaller compression rate than a compression rate of the images in a lateral direction.

In the same field of endeavor, however, discloses a Ramakesavan discloses rear looking vision system comprises the target recognition apparatus according to claim 1, wherein the image compressing unit compresses the images in a lateral direction (fig. 11 element 66), and also compresses the images in a vertical

direction at a smaller compression rate than a compression rate of the images in a lateral direction (column 4, lines 43-51).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use vertical direction as taught by Ramakesavan in the system of Sakums because Ramakesavan provides Sakuma an improved advanced system for a vehicle includes first and second imaging devices adapted to develop images of an area to the rear of a vehicle. This system enable an operator to be advised about hazards to the sides and rear of vehicle.

Regarding claim 4, Sakuma is silent about the specific details regarding the target recognition apparatus according to claim 1, wherein the image compressing unit compresses the images in a lateral direction, by extracting pixels of the images in a lateral direction at every predetermined plurality of pixels.

In the same field of endeavor, however, discloses a Ramakesavan discloses rear looking vision system comprises the target recognition apparatus according to claim 1, wherein the image compressing unit compresses the images in a lateral direction (fig. 11 element 66), by extracting pixels of the images in a lateral direction at every predetermined plurality of pixels (column 4, lines 43-51).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use extracting pixels of the images in a lateral direction as taught by Ramakesavan in the system of Sakums because Ramakesavan provides Sakuma an improved advanced system for a vehicle includes first and second imaging devices adapted to develop images of an area to the rear of a vehicle. This system enable an operator to be advised about hazards to the sides and rear of vehicle.

3. Claims 5-10 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakuma et al (U S 6,766,038 B1) and Ramakesavan (U S 6,184,781 B1) as applied to claim 1 and further in view of Saneyoshi (U S 5,307,136).

Regarding claim 5, Sakuma and Ramakesavan are silent about the specific details regarding the target recognition apparatus according to claim 1, wherein the image compressing unit compresses the images in a lateral direction, by grouping pixels that continue in a lateral direction in the images into groups of pixels, each group having a predetermined plurality of pixels, and by extracting a pixel that has a maximum gradation among pixels in each group.
In the same field of endeavor (detection system), however, Saneyoshi discloses distance detection system for vehicles system comprises the target recognition apparatus according to claim 1, wherein the image compressing unit compresses the images in a lateral direction, by grouping pixels that continue in a lateral direction in the images into groups of pixels, each group having a predetermined plurality of pixels, and by extracting a pixel that has a maximum gradation among pixels in each group (column 3, lines 43-68).
It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a maximum gradation among pixels in each group as taught by Saneyoshi in the system of Sakuma because Saneyoshi provides Sakuma an improved advanced system for a vehicle capable of obtaining a distance contribution of an entire picture at high speed and without a decrease of the information amount.

Regarding claim 6, Sakuma and Ramakesavan are silent about the specific details regarding the target recognition apparatus according to claim 1,

wherein the image compressing unit compresses the images in a lateral direction, by grouping pixels that continue in a lateral direction in the images into groups of pixels, each group having a predetermined plurality of pixels, and by extracting a pixel that has a minimum gradation among pixels in each group.

In the same field of endeavor (detection system), however, Saneyoshi discloses distance detection system for vehicles system comprises the target recognition apparatus according to claim 1, wherein the image compressing unit compresses the images in a lateral direction, by grouping pixels that continue in a lateral direction in the images into groups of pixels, each group having a predetermined plurality of pixels, and by extracting a pixel that has a minimum gradation among pixels in each group (column 3, lines 43-68).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a minimum gradation among pixels in each group as taught by Saneyoshi in the system of Sakuma because Saneyoshi provides Sakuma an improved advanced system for a vehicle capable of obtaining a distance contribution of an entire picture at high speed and without a decrease of the information amount.

Regarding claim 7, Sakuma and Ramakesavan are silent about the specific details regarding the target recognition apparatus according to claim 1, wherein the image compressing unit puts pixels that continue in a lateral direction in the images into groups of pixels, each group having a predetermined plurality of pixels, compresses the images in a lateral direction by setting each group as one pixel, and fixes a gradation of this one pixel as an average value of gradations of pixels in each group.

In the same field of endeavor (detection system), however, Saneyoshi discloses distance detection system for vehicles system comprises the target recognition apparatus according to claim 1, wherein the image compressing unit puts pixels that continue in a lateral direction in the images into groups of pixels, each group having a predetermined plurality of pixels, compresses the images in a lateral direction by setting each group as one pixel, and fixes a gradation of this one pixel as an average value of gradations of pixels in each group (column 7, lines 4-9 and column 8, lines 19-22).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use an average value of gradations of pixels as taught by Saneyoshi in the system of Sakuma because Saneyoshi provides Sakuma an improved advanced system for a vehicle capable of obtaining a distance contribution of an entire picture at high speed and without a decrease of the information amount.

Regarding claim 8, Sakuma and Ramakesavan are silent about the specific details regarding the target recognition apparatus according to claim 1, wherein the image compressing unit puts pixels that continue in a lateral direction in the images into groups of pixels, each group having a predetermined plurality of pixels, compresses the images in a lateral direction by setting each group as one pixel, and fixes a gradation of this one pixel as a total sum of gradations of pixels in each group.

In the same field of endeavor (detection system), however, Saneyoshi discloses distance detection system for vehicles system comprises the target recognition apparatus according to claim 1, wherein the image compressing unit puts pixels that continue in a lateral direction in the images into groups of pixels, each group having a predetermined plurality of pixels, compresses the images in a lateral

direction by setting each group as one pixel, and fixes a gradation of this one pixel as a total sum of gradations of pixels in each group (column 13, lines 37-42).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use total sum of gradations of pixels as taught by Saneyoshi in the system of Sakuma because Saneyoshi provides Sakuma an improved advanced system for a vehicle capable of obtaining a distance contribution of an entire picture at high speed and without a decrease of the information amount.

Regarding claim 9, Sakuma and Ramakesavan are silent about the specific details regarding the target recognition apparatus according to claim 1, wherein the image compressing unit puts pixels that continue in a lateral direction in the images into groups of pixels, each group having a predetermined plurality of pixels, compresses the images in a lateral direction by setting each group as two pixels, and extracts a maximum value and a minimum value of gradations of pixels in the order of appearance in each group, as gradations of the two pixels. In the same field of endeavor (detection system), however, Saneyoshi discloses distance detection system for vehicles system comprises the target recognition apparatus according to claim 1, wherein the image compressing unit puts pixels that continue in a lateral direction in the images into groups of pixels, each group having a predetermined plurality of pixels, compresses the images in a lateral direction by setting each group as two pixels, and extracts a maximum value and a minimum value of gradations of pixels in the order of appearance in each group, as gradations of the two pixels (column 13, lines 37-42).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a maximum value and a minimum value of gradations

of pixels as taught by Saneyoshi in the system of Sakuma because Saneyoshi provides Sakuma an improved advanced system for a vehicle capable of obtaining a distance contribution of an entire picture at high speed and without a decrease of the information amount.

Regarding claim 10, Sakuma and Ramakesavan are silent about the specific details regarding the target recognition apparatus according to claim 1, wherein the image compressing unit puts pixels that continue in a lateral direction in the images into groups of pixels, each group having a predetermined plurality of pixels, compresses the images in a lateral direction by setting each group as two pixels, and extracts two gradations between which there is a largest change in each group, as gradations of the two pixels.

In the same field of endeavor (detection system), however, Saneyoshi discloses distance detection system for vehicles system comprises the target recognition apparatus according to claim 1, wherein the image compressing unit puts pixels that continue in a lateral direction in the images into groups of pixels, each group having a predetermined plurality of pixels, compresses the images in a lateral direction by setting each group as two pixels, and extracts two gradations between which there is a largest change in each group, as gradations of the two pixels(column 14, lines 23-32).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a maximum values of gradations of pixels as taught by Saneyoshi in the system of Sakuma because Saneyoshi provides Sakuma an improved advanced system for a vehicle capable of obtaining a distance contribution of an entire picture at high speed and without a decrease of the information amount.

Regarding claim 21, Sakuma and Ramakesavan are silent about the specific details regarding the target recognition apparatus according to claim 1, wherein the target detecting unit detects positions in a lateral direction at which an added value of gradations in a vertical direction exceeds a constant value whose adjacent position in a lateral direction at which the added value is less than the constant value, as both ends of a target.

In the same field of endeavor (detection system), however, Saneyoshi discloses distance detection system for vehicles system comprises the target recognition apparatus according to claim 1, wherein the target detecting unit detects positions in a lateral direction at which an added value of gradations in a vertical direction exceeds a constant value whose adjacent position in a lateral direction at which the added value is less than the constant value, as both ends of a target (column 9, lines 66-68 and column 10, lines 1-5).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use added value as taught by Saneyoshi in the system of Sakuma because Saneyoshi provides Sakuma an improved advanced system for a vehicle capable of obtaining a distance contribution of an entire picture at high speed and without a decrease of the information amount.

4. Claims 11-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakuma et al (U S 6,766,038 B1) and Ramakesavan (U S 6,184,781 B1) as applied to claim 1 and further in view of Minowa et al (U S 6,385,529 B1).

Regarding claim 11, Sakuma and Ramakesavan are silent about the specific details regarding the target recognition apparatus according to claim 1, further comprising:

a searching area setting unit for setting a target searching area according to images that have been compressed by the image compressing unit.

In the same field of endeavor (detection system), however, Minowa discloses vehicle and device and method for controlling running of the same comprising the step of:

a searching area setting unit for setting a target searching area according to images that have been compressed by the image compressing unit (fig. 1 element 33 and column 3, lines 59-61).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a searching area setting unit as taught by Minowa in the system of Sakuma because Minowa provides Sakuma an improved advanced system for controlling traveling of the vehicle. It more particularly relates to a vehicle controlling its traveling conditions and an apparatus for and method of controlling the traveling, upon recognition of traveling environment ahead of the vehicle.

Regarding claim 12, Sakuma and Ramakesavan are silent about the specific details regarding the target recognition apparatus according to claim 11, wherein the searching area setting unit sets a whole surface of an image as a target searching area.

In the same field of endeavor (detection system), however, Minowa discloses vehicle and device and method for controlling running of the same comprises the target recognition apparatus according to claim 11, wherein the searching area setting unit sets a whole surface of an image as a target searching area. (column 8, lines 3-24).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use surface of an image as taught by Minowa in the system of Sakuma because Minowa provides Sakuma an improved advanced system for controlling traveling of the vehicle. It more particularly relates to a

vehicle controlling its traveling conditions and an apparatus for and method of controlling the traveling, upon recognition of traveling environment ahead of the vehicle.

Claims 13 and 14 are similarly analyzed as claim 11 above.

Regarding claim 15, Sakuma and Ramakesavan are silent about the specific details regarding the target recognition apparatus according to claim 11, wherein the searching area setting unit is setting a target searching area based on an area in which the target detecting unit has both detected ends of a target last time.

In the same field of endeavor (detection system), however, Minowa discloses vehicle and device and method for controlling running of the same comprises the target recognition apparatus according to claim 11, wherein the searching area setting unit is setting a target searching area based on an area in which the target detecting unit has both detected ends of a target last time (column 6, lines 43-58).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use target detecting as taught by Minowa in the system of Sakuma because Minowa provides Sakuma an improved advanced system for controlling traveling of the vehicle. It more particularly relates to a vehicle controlling its traveling conditions and an apparatus for and method of controlling the traveling, upon recognition of traveling environment ahead of the vehicle.

Regarding claim 16, Sakuma and Ramakesavan are silent about the specific details regarding the target recognition apparatus according to claim 11, wherein the searching area setting unit sets an area in which another decision unit has decided that there is a possibility of the existence of a target, as a searching area.

In the same field of endeavor (detection system), however, Minowa discloses vehicle and device and method for controlling running of the same comprises the target recognition apparatus according to claim 11, wherein the searching area setting unit sets an area in which another decision unit has decided that there is a possibility of the existence of a target, as a searching area (column 7, lines 63-67).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use existence of target as taught by Minowa in the system of Sakuma because Minowa provides Sakuma an improved advanced system for controlling traveling of the vehicle. It more particularly relates to a vehicle controlling its traveling conditions and an apparatus for and method of controlling the traveling, upon recognition of traveling environment ahead of the vehicle.

Regarding claim 17, Sakuma and Ramakesavan are silent about the specific details regarding the target recognition apparatus according to claim 1, wherein the target detecting unit detects both ends of a target by detecting edges.

In the same field of endeavor (detection system), however, Minowa discloses vehicle and device and method for controlling running of the same comprises the target recognition apparatus according to claim 1, wherein the target detecting unit detects both ends of a target by detecting edges (column 6, lines 47-53).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use detecting edges as taught by Minowa in the system of Sakuma because Minowa provides Sakuma an improved advanced system for controlling traveling of the vehicle. It more particularly relates to a vehicle controlling its traveling conditions and an apparatus for and method of controlling the traveling, upon recognition of traveling environment ahead of the vehicle.

Regarding claim 18, Sakuma and Ramakesavan are silent about the specific details regarding the target recognition apparatus according to claim 1, wherein the target detecting unit detects a range in a lateral direction in which a variance in added values of gradations in a vertical direction is not larger than a constant value, as an existence position of a target.

In the same field of endeavor (detection system), however, Minowa discloses vehicle and device and method for controlling running of the same comprises the target recognition apparatus according to claim 1, wherein the target detecting unit detects a range in a lateral direction in which a variance in added values of gradations in a vertical direction is not larger than a constant value, as an existence position of a target (column 7, lines 63-67 and column 8, lines 25-32). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use variance in added values of gradations in a vertical direction is not larger than a constant value as taught by Minowa in the system of Sakuma because Minowa provides Sakuma an improved advanced system for controlling traveling of the vehicle. It more particularly relates to a vehicle controlling its traveling conditions and an apparatus for and method of controlling the traveling, upon recognition of traveling environment ahead of the vehicle.

Claims 19 and 20 are similarly analyzed as claim 18 above.

Other prior art cited

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U. S. Patent (U S 6,570,998 B1) to Ohtsuka et al is cited for vehicle area

detecting apparatus and vehicle are determining method.

U.S. Patent (U S 5,400,244) to Watanabe et al is cited for running control system for mobile robot provided with multiple sensor information integration system.

U. S. Patent (U S 6,097,315) to Minter is cited for multi-indicator aviation pilot collision alert.

U. S. Patent (U S 4,497,065) to Tisdale et al is cited for target recognition system enhanced by active signature measurements.

Contact Information

6. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to ABOLFAZL TABATABAI whose telephone number is (703) 306-5917.
The Examiner can normally be reached on Monday through Friday from 9:30 a.m. to 7:30 p.m. If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Mehta Bhavesh M, can be reached at (703) 308-5246.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Abolfazl Tabatabai

Patent Examiner

Group Art Unit 2625

February 18, 2005

A-Tabatabai

KANJIBHAI PATEL
PRIMARY EXAMINER